

Wagner (Clin.)

SUB-HYOIDEAN PHARYNGOTOMY

FOR THE

REMOVAL OF THE EPIGLOTTIS FOR EPITHELIOMA,

WITH ILLUSTRATIVE CASE.

BY

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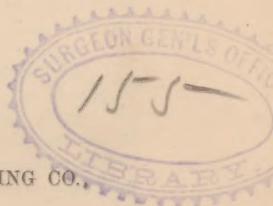
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SUB-HYOIDEAN PHARYNGOTOMY

FOR THE REMOVAL OF THE EPIGLOTTIS FOR EPITHELIOMA, WITH ILLUSTRATIVE CASE.*

J. U——, fifty-three years of age ; occupation, chemist ; large, well-developed ; of excellent physique ; florid complexion, called at my office for treatment on July 29, 1880. He gave the following account of himself to Dr. Howland, under whose treatment he temporarily placed himself : In February, 1880, he first experienced a sensation of uneasy tickling in the left side of the throat, and of something being lodged there. A few weeks later he suffered from pain, which was greatly increased during the act of swallowing. He had had no treatment but anodyne and astringent gargles from time to time. A laryngoscopic examination disclosed a large nodulated growth on the upper surface of the epiglottis, arising from the left side. The interior of the larynx, with the exception of slight hyperæmia, was quite normal in appearance. Dr. Whitfield, Ward of the Metropolitan Throat Hospital, also saw the case, and as there was a history of syphilis, contracted in early youth, he was given potass. iodid., grs. xv., three times daily, which was gradually increased to grs. cl. in the twenty-four hours. In addition, local treatment of gargles and sprays of carbolic acid, and brush applications of zinci chlor., grs. xx. to $\frac{3}{4}$ i., and occasional insufflations of iodoform.

I saw him for the first time on September 1st, the date of my return, and was informed by Dr. Howland that the growth had increased to three times its original size. The whole of the anterior surface of the epiglottis was covered by an angry-looking, nodulated, fungoid vegetation ; on the left side, near the

* Read before the American Laryngological Association, May 10, 1881.

free edge, there was slight ulceration, which showed a disposition to extend.

No evidence of lung complication.

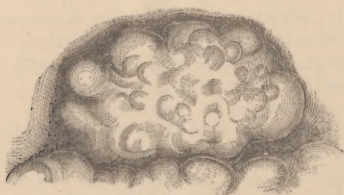
The rapid and marked aggravation of the symptoms, and actual increase in the size of the growth which followed the use of the iodide of potassium, together with the pain, which at this time became a very prominent symptom, especially during the act of swallowing, induced me to regard it as malignant. I informed him of my opinion, and discontinued the constitutional treatment.

Upon his second visit to me I proposed the removal of the epiglottis, but as the operation was unusual, and perhaps would involve life, I suggested that he should consult Drs. Lefferts and Lincoln, for the purpose of obtaining their opinion as to the character of the tumor, and the expediency of the operation.

Neither of the gentlemen agreed with me as to the malignancy of the growth, and suggested continuing for a while the anti-syphilitic treatment, and, in case of my concurring, they expressed a desire to examine him later. The tumor grew rapidly under the renewal of the treatment, and upon a second examination, after an interval of ten days, they agreed that the operation could no longer be prudently delayed.

On October 4th, the patient was admitted into the Metropolitan Throat Hospital for operation.

The accompanying woodcut, from a drawing made



by Dr. C. Heitzman, accurately represents the epiglottis as it appeared at that time. Ether was administered, and the epiglottis removed by a longi-

tudinal incision extending from the hyoid bone, to the thyroid notch. Malgaigne recommends the transverse incision along the inferior border of the hyoid bone, through the skin, superficial fascia, and inner half of the sterno-hyoid muscles, claiming that the folds of the skin in this part hinder reunion of longitudinal wounds.

I then introduced my knife into the wound thus made, and severed the attachment of the epiglottis to the thyroid. By the action of the tongue, the epiglottis was drawn upward and forward, and I had great difficulty, by reason of the narrowness of the incision and the limited space it gave me, in recognizing the severed valve (covered as it was by growth) from the surrounding parts. It was so completely softened by destructive ulceration, that it easily tore when seized by the forceps. It became necessary for an assistant to force the epiglottis downward and backward by means of his index finger, introduced through the mouth. Respiration was suddenly suspended. I quickly passed through the incision and over the thyroid notch into the larynx, and between the cords, one of Schroetter's bougies, used in the treatment of laryngeal stenosis. By blowing through this, respiration was rapidly re-established.

The wound was closed by three sutures; no unfavorable constitutional symptoms were developed nor unusual shock followed, and he was able to take food without annoyance, except from an irritating cough.

On the third day a laryngoscopic examination was made. On what appeared to be a portion of the left glosso-epiglottic fold was observed a small nodulated mass resembling the tumor which had been removed. This increased daily in size, assuming to the eye the characteristics of the growth.

On the twelfth day I determined to remove it. The longitudinal incision was laid open, and this I crossed by a transverse one extending along the inferior border of the hyoid bone, and dividing the inner half of the sterno-hyoid muscles, as recommended by Malgaigne. The two made a T-shaped incision, and gave a most excellent view of all the

parts. The growth was thoroughly removed, and, by introducing the finger through the wound under the hyoid bone, and carrying it into the mouth and on to the superior surface of the tongue, the parts could be felt perfectly free of growth or any portion of the glosso-epiglottic folds.

A laryngoscopic examination, made several days after the operation, gave an excellent view of the interior of the larynx.

On the twelfth day the growth reappeared, starting apparently from what was its original site on the left side at the base of the tongue, near the glosso-epiglottic fold. It gradually extended upward and forward from left to right, attacking in its march the tongue itself, and, as it increased, it assumed the general shape of the epiglottis.

The galvano-cautery was applied freely to the fungoid vegetations whenever they appeared, at intervals of from a week to ten days; slight bleeding always followed its application, but instead of arresting, it served to make the proliferations more luxuriant.

The cautery was discontinued about the middle of November, and the patient discharged from hospital, and there was every indication that the pharynx and interior of the larynx would shortly be attacked by the disease. He reported as an outpatient about once in ten days.

Early in December he was ordered Chian turpentine, one grain three times daily, in pills made according to Clay's formula. After taking this drug for about three months, the dose having been increased to grs. iss. three times daily, there seemed to be an actual arrest of the disease—certainly its destructive process was not so rapid; small portions of slough came away from time to time, revealing healthy-looking granulations. Whether or not this improvement could be ascribed to the drug, I cannot, in the face of the negative results from its administration by others, say; but the improvement, if such it really was, did not last long. Since early in April the disease has slowly, but steadily, advanced; and on May 7th, when I last saw him, a mass, as large as a

walnut, at the base of the tongue completely shut from view the larynx; but, as far as I can determine, it is extending downward into the larynx, and has already attacked the pharynx; he has almost constant cough, pain, and dyspnoea; and, although he still takes sufficient food to maintain strength, dysphagia is a very marked symptom.

If called upon again to excise the epiglottis, I should prefer the T-shaped incision; neither the longitudinal nor high transverse alone allow of sufficient space for the removal of the valve, if swollen and thickened by disease. Excision of the entire organ *per vias naturales* is impracticable.

The special points of interest in this case are: First, diagnosis, which admitted of doubt by reason of the history of syphilis; this uncertainty was removed from my mind after a thorough trial of anti-syphilitic remedies, the peculiar nodulated appearance of the growth was unlike any case of tertiary syphilis that had ever come under my observation.

Second, rapid recurrence of the growth after removal and apparent arrest of its progress through Chian turpentine.

DR. C. HEITZMAN, to whom the growth was submitted for microscopical examination, made the following report:

"The mucous layer of the epiglottis is considerably widened, both the rete mucosum and the connective tissue increased in size. From the rete mucosum there are running into the connective tissue very large, peg-like elongations, branching and anastomosing. In every peg there are concentric nests of epithelia, greatly varying in size. The subjacent connective tissue is freely supplied with blood-vessels, and crowded with small, globular elements down to the perichondrium. The reticular cartilage is unchanged.

"*Diagnosis:* Cancer of epiglottis, of the variety termed epithelioma. The heavy infiltration of the connective tissue with small medullary elements indicate a very malignant, quickly growing cancer."

BIBLIOGRAPHY OF EXCISION OF THE GLOTTIS.

The following encyclopædias of surgical literature have been consulted, with the results annexed hereto :

Archives Générales de Médecine, from its foundation in 1823 to the present date, without the record of an excision of this organ.

Annales d'Oreille et du Larynx, from its foundation in 1875 to 1880, with a similar result.

Gazette Hebdomadaire, a complete register, without an instance of extirpation of the epiglottis.

Medico-Chirurgical Review, afterward the *British Medical and Surgical Review*, from its beginning in 1820 to 1877, with a similar result.

"Transactions of the Medico-Chirurgical Society of Great Britain," from its origin in 1809 to 1880, without an instance on record.

London Lancet, from its foundation in 1824 to 1881. In vol. i., of 1868, page 530, is a description, by Dr. Hermann Beigel, of two cases of "loss of the epiglottis without pain, or loss of speech, or inconvenience in deglutition." These will be alluded to by way of correction of Dr. William Porter's reference to them as cases of removal of the epiglottis in their proper place.

Schmidt's Jahrbücher, from its foundation to the present year, without a single recorded case of removal of the organ.

"Transactions of the Pathological Society of London," from their first volume in 1846 to 1879. These "Transactions" furnish many more data of fatal and recovered cases than any of the preceding ; but they do not produce an instance of exsection of the organ. However, akin to it, is the description, in vol. xxi., page 51, March 6, 1870, by Dr. Morrel Mackenzie, of the removal of a "large sarcomatous growth from under-surface of the epiglottis," after a tracheotomy made seven weeks previously. Patient was a retired officer of the Indian army, fifty-one years of age, who had had troublesome cough, aphonia, and dysphagia. Twenty years before, patient had contracted syphilis, one of whose results was superfi-

cial ulceration and slight thickening of the left side of the epiglottis. It responded to treatment of iodide of potassium and local astringents. The growth was mammillated, pale, and of the size of a cherry; weighed fifty grains, was one and a fourth inch long by three-fourths of an inch wide. Patient recovered. The pathological interest in the case was the extreme rapidity of its production, and its probable dependence on the syphilitic repletion.

Dr. Prat, of the French navy, removed a growth from the under-surface of the epiglottis after the description of the operation by Malgaigne. This case is described by Mackenzie in his new work, at page 331.

In the *American Journal of Medical Sciences*, April, 1879, Dr. William Porter has an article on "Excision of the Epiglottis." Dr. Porter states three theses, one of which is, that removal of the epiglottis does not necessarily, directly or indirectly, threaten either the life or comfort of the patient. Evidence of its loss is given by its less distinct vocal sounds of "a" and "e;" the voice becomes rough and harsh, especially if the edge of the cartilage is irregular. Dr. Porter adduces the two well-known cases of Baron Larrey—that of General Murat and of the Egyptian soldier, both of whom lost the epiglottis by the direct passage of a musket-ball. He adduces a third case of Dr. Bauer, of Indian Territory, where the epiglottis was entirely ulcerated away. In this last case the voice had a hissing sound, and words were indistinct. He further details two other cases in his own practice, where syphilitic ulceration destroyed the entire epiglottis; in both, different qualities of voice were preserved, while in one the voice was normal. In a third case in his own practice, he found a tumor of the epiglottis, which had existed about five months. His experience, as to voice and swallowing, with his first two cases, led him to consider the propriety of surgical removal of the growth, which occupied fully three-fourths of the edge of the epiglottis. Prophylactic tracheotomy was unnecessary, as the larynx was under good control. The growth was removed

per vias naturales with antero-posterior angular forceps, having a cutting edge. The succeeding profuse granulations were checked with nitrate of silver, and the edge healed in a fortnight. Just before the operation, deglutition was very difficult, and six weeks subsequent to it there was no functional disturbance. The growth was Virchow's enchondroma. Cartilage cells in groups in a fibrous reticulum were everywhere to be seen. The growth extended through the mucous membrane, and was directly connected to the epiglottidean cartilage, but there was no degeneration of tumor substance. Dr. Porter incorrectly reports Beigel's two cases as cases of removal of the epiglottis (they were, as reported by Beigel himself, cases of ulceration of the whole epiglottis), and concludes, very properly, from his own and Beigel's experience that the removal of a benign or malignant growth, not involving adjacent parts, is both practicable and justifiable.

FUNCTIONS OF THE EPIGLOTTIS.

In connection with this case, I regard it fitting to allude somewhat in detail to the rôle which the epiglottis plays in deglutition and the formation of the voice. One of the best, as well as one of the latest, contributions to the literature of this department, is the essay of G. L. Walton on this subject, being a resume of his experiments in the laboratory of Dr. H. P. Bowditch, of Harvard Medical School.* He presents two theses. 1. The epiglottis is not essential to deglutition, even of liquids. 2. It is an important agent in the modification of the voice. Longet's experiments, taken from the *Traité de Physiologie*, tome i., page 106, are detailed—who concluded that the epiglottis played an important part in deglutition, especially of fluids. Magendie's experiments do not coincide as to results with those of Longet, and the latter affirms that Magendie's excisions of the epiglottis in the animals employed were incomplete. Walton removed, by the mouth, the epiglottis of six cats and dogs, and found that

* Journal of Physiology, vol. i., Nos. 4 and 5.

solids and liquids did not enter the larynx. He found, also, that too great a section of the lips (glosso-epiglottic folds) may induce cough. Moura says the lower one-third of the human epiglottis is necessary to deglutition, which he proved by drawing up and attaching the epiglottis to the tongue, when swallowing of liquids was impossible without cough.

As to the second thesis—that the epiglottis modifies the voice, it is well-known that this organ occupies different positions during vocalization, involving changes in *pitch*, *quality*, and *intensity*. Moura, Garcia, Magendie, and Czermak all attest to this. Merkel and J. Müller affirm that the pitch is lowered by the pressing down of the epiglottis on the larynx. It is an undoubted fact that defective voice has followed ossification and other lesions of the epiglottis; but at the same time it is a subject of pertinent inquiry, whether or no the diseased process has extended further than the epiglottis. As to *pitch*, Walton finds the epiglottis a “tremor,” also a “resonating plate.” Musical sounds are incomplete, unless the original vibrations are repeated by a solid body. This is seen in the violin and trumpet. Walton and Bowditch attached a human larynx to an air-blast, thus producing an artificial voice, and showed that every change of position of the epiglottis changed the pitch of the note. It is to be noted here, that when the epiglottis was stretched tense, the tone became very brilliant; and when it was pushed back by the tongue toward the laryngeal aperture, it became sombre. As to *intensity*, an increased blast of air produced an increased tension of the vocal chords; hence, an elevation of pitch, which is a well-known fact in physics.

In birds, the epiglottis is wanting, but their deglutition is unaffected by its absence; but how do singing-birds so well modify the voice without the epiglottis? In these animals there is a “lower glottis” at the bifurcation of the bronchi; at this point there is a membrana, to which Owen has given the name “membrana semilunaris;” this membrane

ascends into the trachea, and ends in a free margin. It attains its highest development in singing birds, and, being vibratile, gives a thrill to the voice; hence its necessity, as a factor in the modification of the voice.

I desire to further adduce two pathological references to the functions of the epiglottis, and will then bring this lengthy paper to a close. In *Schmidt's Jahrbücher*, vols. cxxxvii. and cxxxviii., 1868, C. J. Eberth notes the autopsy of a woman who died from cholera, and in whom was a total defect of the epiglottis. Search for tubercular syphilis and kindred processes were in vain, as a cause of the defect. The protocol revealed nothing to show that in life the patient had suffered in any way from its loss.

In the "Transactions of the Pathological Society of London," vol. xiv., 1863, Dr. Gibb reports, May 19, a case of "total loss of the epiglottis with aphonia from ulceration of the larynx and pharynx." Epiglottis was wholly destroyed to its root, with adjacent ulceration of the aryteno-epiglottic folds. Astringent and soothing gargles, solution of nitrate of silver and iodide of zinc, restored healthy granulations, and the patient recovered voice and easy deglutition for both fluids and solids.

The operation was witnessed by Drs. Henry, Lincoln, Pooley, Ward, Peck, Howland, Hope, and several others.

To Dr. E. S. Peck, of the Metropolitan Throat Hospital, I am indebted for the exhaustive research into the bibliography of the subject.